

# CONWAY LAKE

## 2018 SAMPLING HIGHLIGHTS

### Station – 2 Gull

Conway and Eaton, NH



Station 2 Gull (Figure 7) was used as a reference point to represent the overall Conway Lake water quality. Water quality data displayed in Tables 1 and 2 are surface water measurements with the exception of the dissolved oxygen data that summarize conditions near the lake bottom.

**Blue** = Excellent =  
Oligotrophic

**Yellow** = Fair =  
Mesotrophic

**Red** = Poor = Eutrophic

**Gray** = No Data

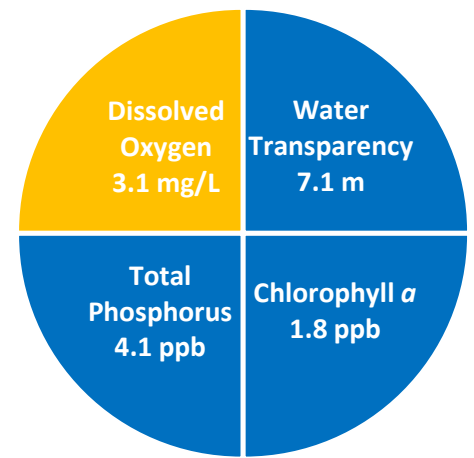


Figure 1. Conway Lake Water Quality (2018)

Table 1. 2018 Conway Lake Seasonal Averages and NH DES Aquatic Life Nutrient Criteria<sup>1</sup>

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Conway Lake Average (range)	Conway Lake Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	7.1 meters (5.0 – 8.8)	Oligotrophic
Chlorophyll <i>a</i> <sup>1</sup> (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.8 ppb (0.7 – 3.7)	Oligotrophic
Total Phosphorus <sup>1</sup> (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	4.1 ppb (single value)	Oligotrophic
Dissolved Oxygen (mg/L)	5.0 – 7.0	2.0 – 5.0	<2.0	3.1 mg/L (2.7 – 4.4)*	Mesotrophic

\* Dissolved oxygen concentrations were measured on July 31, 2018 between 8.5 and 11.0 meters, in the bottom waters.

Table 2. 2018 Conway Lake Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Conway Lake Average (range)	Conway Lake Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	23.5 color units (range: 16.1 – 33.1)	Lightly tea colored
Alkalinity (mg/L)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	4.3 mg/L (range: 3.7 – 5.0)	Moderately vulnerable
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			7.0 standard units (range: 6.9 – 7.0)	Optimal range for fish growth and reproduction
Specific Conductivity ( $\mu$ S/cm)	< 50 $\mu$ S/cm Characteristic of minimally impacted NH lakes		50-100 $\mu$ S/cm Lakes with some human influence	> 100 $\mu$ S/cm Characteristic of lakes experiencing human disturbances		51.2 $\mu$ S/cm (range: 50.9 – 51.4)	Characteristic of lakes with some human influence

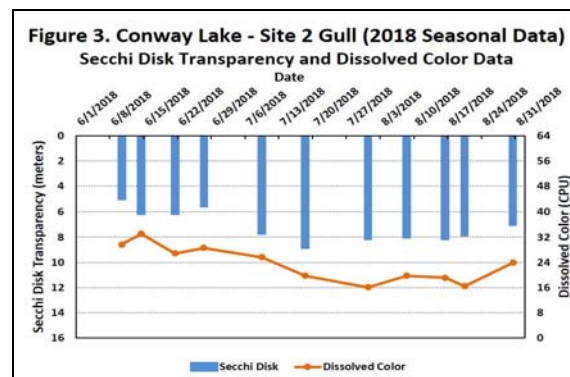
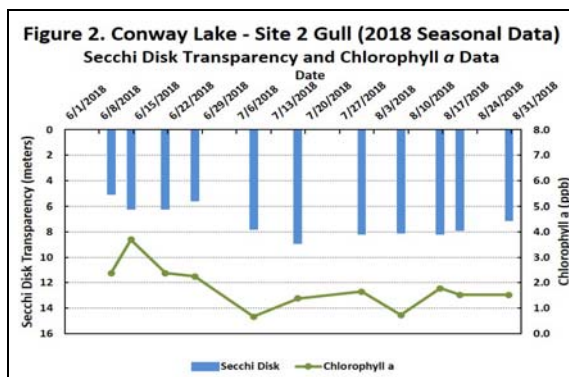


Figure 2 and 3. Seasonal Secchi Disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

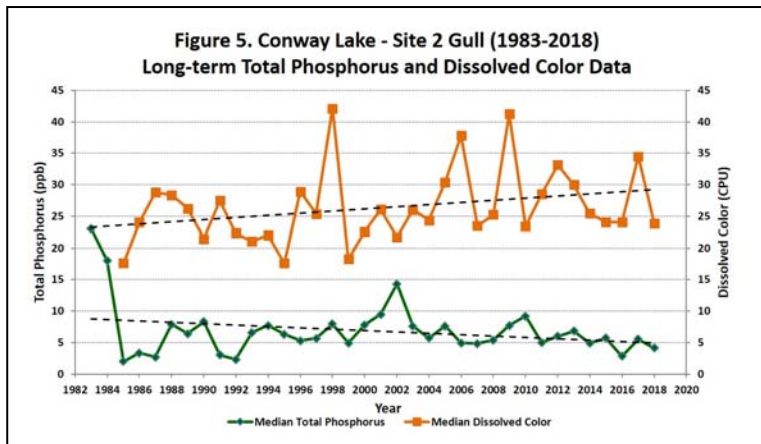
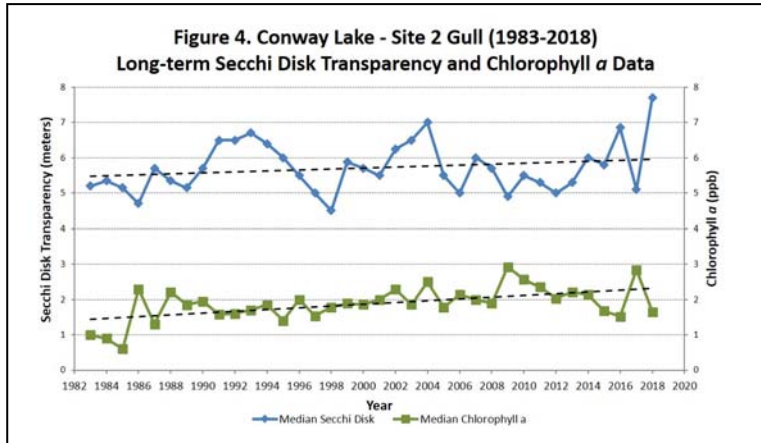
## LONG-TERM TRENDS

**WATER CLARITY:** The Conway Lake water clarity measurements, measured as Secchi Disk transparency, have been highly variable among years. However, the data collected over the thirty-six year span display a relatively stable long-term trend. (Figure 4).

**CHLOROPHYLL:** The Conway Lake chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of increasing concentrations over a thirty-six year span (Figure 4).

**TOTAL PHOSPHORUS:** Phosphorus is the nutrient most responsible for microscopic plant growth. The Conway Lake total phosphorus concentrations display a trend of decreasing concentrations over a thirty-six year span (Figure 5).

**COLOR:** The Conway Lake color data, the result of naturally occurring “tea” color substances from the breakdown of soils and plant materials, display a trend of increasing concentrations over a thirty-four year span (Figure 5).



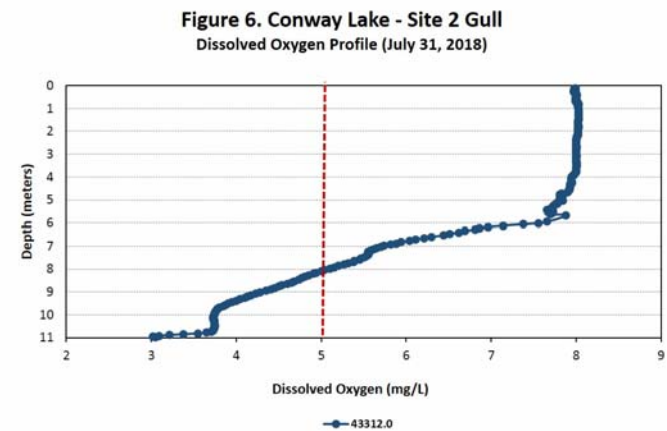
**Table 3. Conway Lake Seasonal Average Water Quality Inter-Site Comparison (2018)**

Sampling Station	Average (range) Secchi Disk Depth (meters)	Average (range) Total Phosphorus (ppb)	Average (range) Chlorophyll <i>a</i> (ppb)	Average (range) Dissolved Color (CPU)
1 Andrews	6.7 m (5.2 – 7.8)	3.9 ppb (single value)	1.6 ppb (0.3 – 2.8)	23.5 CPU (19.1 – 31.3)
2 Gull	7.1 m (5.0 – 8.8)	4.1 ppb (single value)	1.8 ppb (0.7 – 3.7)	23.5 CPU (16.1 – 33.1)
3 Dolloff	6.6 m (5.0 – 7.2)	3.1 ppb (single value)	1.7 ppb (0.4 – 2.8)	25.0 CPU (17.9 – 34.2)
South Cove	7.0 m (5.1 – 8.0)	3.7 ppb (single value)	2.0 ppb (0.8 – 4.2)	24.3 CPU (17.3 – 30.4)
Paige Brook	3.2 m (1.4 – 4.5)	6.3 ppb (single value)	1.7 ppb (1.0 – 2.8)	24.7 CPU (17.4 – 31.3)

\* indicates the Secchi disk was consistently visible on the lake bottom.

Figures 4 and 5. Changes in the Conway Lake water clarity (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1983 and 2018. **These data illustrate the relationship among plant growth, water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Long-term trends are based on the analysis of annual median values.

Figure 6. Conway Lake dissolved oxygen profile collected on July 31, 2018. The vertical red line indicates the dissolved oxygen concentration commonly considered the threshold for successful growth and reproduction of cold water fish such as trout and salmon. Notice the decreasing dissolved oxygen concentrations near the lake bottom.



## Recommendations

Implement Best Management Practices within the Conway Lake watershed to minimize the adverse impacts of polluted runoff and erosion into Conway Lake. Refer to “Landscaping at the Water’s Edge: An Ecological Approach” and “New Hampshire Homeowner’s Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home” for more information on how to reduce nutrient loading caused by overland run-off.

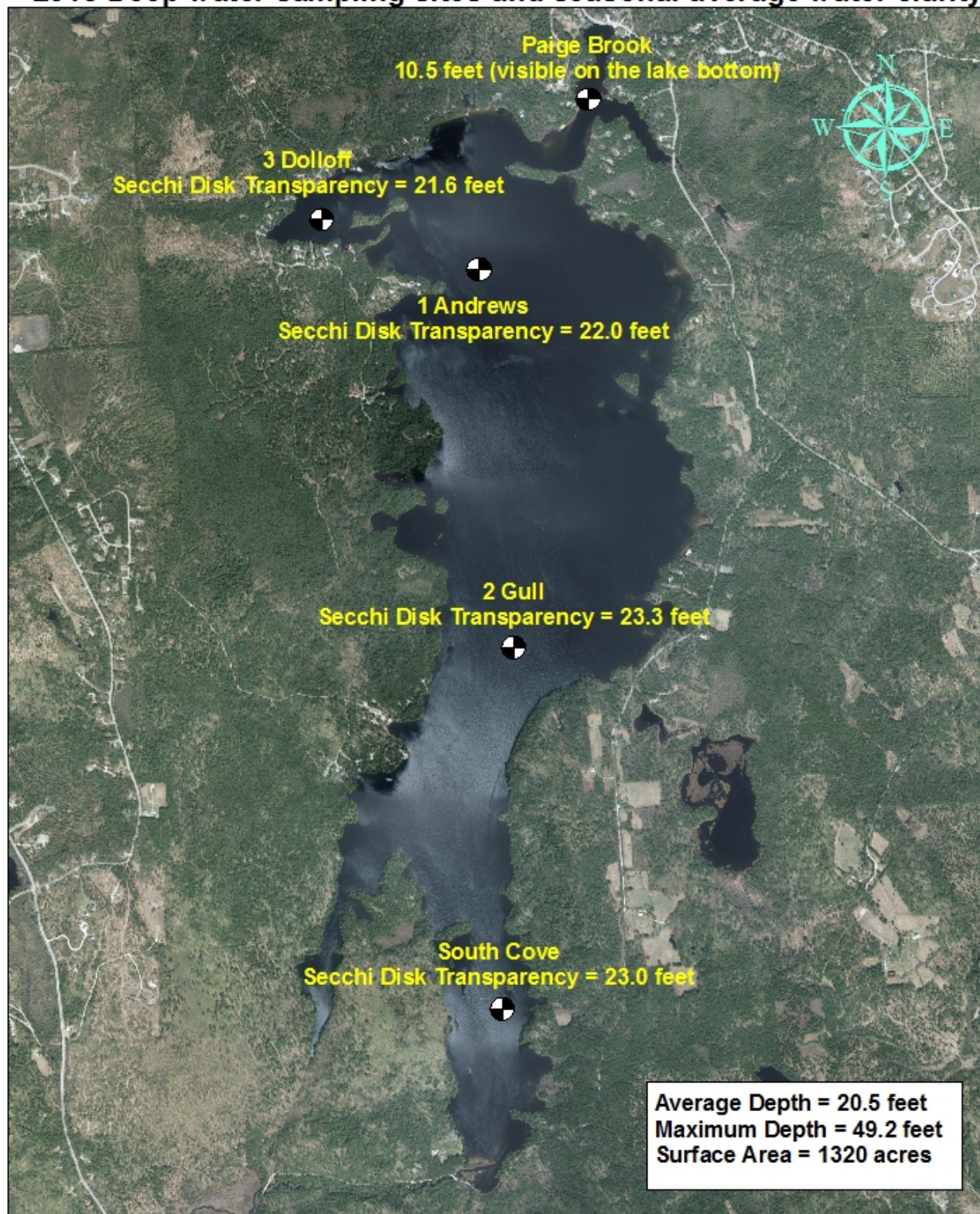
- <https://www.des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>
- [https://extension.unh.edu/resources/files/Resource004159\\_Rep5940.pdf](https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf)



# Figure 7. Conway Lake

Conway & Eaton, NH

2018 Deep water sampling sites and seasonal average water clarity



0 0.3 0.6 0.9 1.2 Miles

Aerial Orthophoto Source: NH GRANIT

Site location GPS coordinates collected by the UNH Center for Freshwater Biology



Extension

